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**EFFECTS OF CHILDCARE ACTIVITIES ON THE DURATION OF  
SELF-EMPLOYMENT**

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**ABSTRACT**

This paper examines the determinants of success in self-employment, with a focus on the effects of the time spent caring for children. Many public policies are designed to encourage self-employment, especially among women. In addition, it has been argued that one of the reasons individuals, and women in particular, choose self-employment over wage and salary sector employment is in order to spend more time with their children. The effect of time spent with children on the probability of success in self-employment has not been studied in previous work, however. This study analyzes spells of self-employment among workers in eight European nations. Using data from the European Community Household Panel survey for 1994-1999, we estimate the effect of time spent caring for children on the duration of self-employment, controlling for other factors that affect self-employment success rates. The estimates indicate that caring for children significantly reduces the successfulness of self-employment ventures, in most countries studied. The results suggest that policy-makers need to consider child-care policies in conjunction with self-employment policies.

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## EFFECTS OF CHILDCARE ACTIVITIES ON THE DURATION OF SELF-EMPLOYMENT

### **I. Introduction**

Great interest in the determinants and consequences of self-employment and entrepreneurship in general has emerged in the past decade. Much of this interest arises from the perceived role of small business enterprises in employment and economic growth. In addition, self-employment has been viewed as a means of alleviating poverty or unemployment, especially among youth, minorities, and women.

Previous research has been fairly comprehensive in its analysis of self-employment, including time-series analyses of aggregate self-employment rates, cross-sectional analyses of the probability of self-employment, and longitudinal analyses of rates of entry into and exit from self-employment.<sup>1</sup> In addition, analysts have studied the relative earnings of and earnings differences among the self-employed, and some have studied the longer-term consequences of self-employment, in terms of future earnings or employment.<sup>2</sup> Finally, researchers have studied cross-national differences in self-employment behavior (e.g., Blanchflower 2000).

A near constant among the research on self-employment is a recognition of the role of children. That is, most studies of the self-employed include controls for the presence of, the number of, or the ages of children in the household. The results suggest that the number of children in the home is positively related to the probability of self-employment, at least among women, as is the number of young children (Boden 1999, Caputo and Dolinsky 1998, Connelly 1992). Similarly, the number of children at home is correlated with home-based work, which suggests a correlation with self-employment

(Edwards and Field-Hendrey 1996). Authors have inferred from these results that the desire for self-employment among women is related to their household responsibilities, including caring for children (Boden 1999, Cuputo and Dolinsky 1998, Connely 1992, Hundley 2000, Presser 1989). Self-employment is perceived as providing greater flexibility in the timing of work, the place of work, the quantity of work, and the amount of effort at work (Hildebrand and Williams 2003), all of which might provide the ability to spend more time caring for children.

Recent studies have called into question the validity of this relationship, however. There is some evidence in the literature, for example, suggesting that caring for children has a negative effect on the self-employed. Hundley (2001) finds that the presence of young children in the household significantly reduces the earnings of self-employed females, and contributes to the male-female self-employment earnings differential.<sup>3</sup> Some evidence also exists which suggests a negative relationship between self-employment and time spent caring for children. Gustafsson and Kjulin (1994) include a control variable for male self-employment in their analysis of childcare activity among parents in Sweden. They find that females spend less time on child-care when the spouse is self-employed.<sup>4</sup> Hildebrand and Williams (2003) find that self-employed men and women in other countries in Europe also tend to spend less time caring for their children, in most countries studied.

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<sup>1</sup> The papers are far too numerous to list here. Some of the most important early work includes Blau (1987), Evans and Leighton (1989) and Evans and Jovanovich (1989).

<sup>2</sup> Examples of the latter include Ferber and Waldfogal (1998) and Williams (2000, 2003).

<sup>3</sup> It is not clear, however, whether this effect arises because women with young children spend more time caring for them, which takes away from time spent in entrepreneurial activities, or because of unobserved characteristics that might affect, for example, motivation.

<sup>4</sup> For recent analyses of other determinants of time spent caring for children, see Bianci (2000), Sousa-Poza et al. (2001) and Sandberg and Hofferth (2001).

This paper adds to the existing literature by directly measuring the effect of time spent caring for children, measured in hours, on the survival of men and women in self-employment. The analysis is conducted for eight different countries in Europe, which provides the opportunity to compare the effects across countries that differ in culture, institutions, and child-care policies. The paper is part of a broader research agenda in which we attempt to analyze the relationships between entrepreneurship and child-care policies. The ultimate goal is to provide a research basis for an integrated set of policies to encourage entrepreneurship that recognize the role that child-care policies must play. The results presented here should be considered preliminary, with further analyses using alternative methodologies to be conducted in future drafts of the paper.

## **II. Previous Work**

The relationship between time spent caring for children and success in self-employment, as measured by self-employment duration, has not to our knowledge been studied in previous work. Indirect evidence of the effect may be found in studies that include controls for the number of children or dependents in the household, however, to the extent that a greater number of children implies that more time is required to care for them.<sup>5</sup>

The empirical evidence regarding the effect of children on the duration of self-employment is somewhat mixed. Holtz-Eakin, et al. (1994) present results indicating that the number of dependents in the household is negatively related to survival in self-employment in the U.S., but the effect is not statistically significant. Fairlie (1999) finds a similar result for whites in the U.S., but finds that for blacks there is a positive and significant effect of the number of children in the household on survival rates (negative

effect on the rate of exit). Using Canadian data, however, Kuhn and Schuetze (2001) find that older children increase exit rates for the female self-employed. Nziramasanga and Lee (2001) provide evidence of a negative and significant effect of children in a sample of self-employed workers in Zimbabwe. Finally, Bruce (2002) finds a negative and significant effect of children in the 6 to 13 year old age group on self-employment duration in the U.S. He also finds positive, but insignificant, effects for other ages. This is not an exhaustive survey of the literature, but does suggest that the effect of children on the success of the self-employed is not clear cut.

One reason is that the theoretical effect is not obvious. As noted above, additional children can require more supervision by the adult entrepreneur, which takes away from time and effort expended on the self-employment venture. Children can also absorb resources that might otherwise be devoted to the business. We would presume these effects would lead to shorter durations of self-employment. On the other hand, depending on their ages, children might provide labor services that contribute to the success of the self-employed. In addition, children can provide “motivation” for the self-employed, which could contribute to their success. Finally, the effect of the number of children might be non-linear, especially as older children are able to assist in the care of younger children. This could lead to estimation of no effect in a linear specification.

The present paper provides direct evidence of the first effect, through measuring directly the (reported) time spent caring for children, and estimating its relationship with the duration of self-employment.

### **III. Methodology and Data**

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<sup>5</sup> This can depend on the ages of the children, however, as described below.

The research methodology is straightforward. We use standard survival analysis to estimate the effect that time spent caring for children has on the probability of continued self-employment, holding constant other factors that have been found to affect self-employment survival rates.<sup>6</sup> These include educational attainment, household income, financial wealth, age, gender, occupation and industry, among others.<sup>7</sup> Given the different child-care responsibilities that men and women traditionally have, separate analyses are conducted for males and females. Unfortunately not all variables that have been studied in previous work, such as measures of entrepreneurial ability or motivation, are available in the data set used here (described below), and so they will not be included in the analysis.

The data for this analysis is from the European Community Household Panel survey (ECHP).<sup>8</sup> The ECHP is a cross-national, longitudinal survey of the populations of fifteen European nations, begun in 1994. In 1995, over 60,000 households were surveyed. Using this data, we construct “duration” variables for spells of self-employment among the adult population, measured alternatively as months and years of self-employment. The self-employment variable is constructed from a “status in employment” variable for each individual. The time spent caring for children variable is measured as the number of hours per week that the individual reports he or she normally spends looking after children, following Hildebrand and Williams (2003). The data set includes many other personal, family, and job related variables which are included as control variables in the hazard analyses. The analysis is conducted both for a merged

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<sup>6</sup> Future work might examine the effect on other measures of success, such as earnings.

<sup>7</sup> For recent analyses of the determinants of entrepreneurial success, in addition to those cited above, see Taylor (1999), Kangasharju and Pekkala (2002), and Baron and Markman (2003).

<sup>8</sup> See Peracchi (2002) for a description of the data.

data set with all countries included (and country-specific dummy variables) and separately by country.

Not all countries covered by the ECHP are used in the analysis. Data for the U.K., Germany, and Luxembourg are not available in the ECHP after 1996. Data is available since then from each country's separate longitudinal survey (BHPS, SOEP, and PSELL, respectively), but unfortunately the questions about time spent caring for children are not included in those surveys. As a result, we have dropped these countries from the analysis. Other data restrictions also cause us to exclude Austria, Finland and Sweden, and, for some analyses, the Netherlands. The eight countries that are included in all of the analyses are Belgium, Denmark, France, Greece, Ireland, Italy, Portugal, and Spain. Depending on the sample restrictions imposed, the analysis is conducted for approximately 6,000 spells of self-employment in these eight countries.

In order to provide for the longest possible spell lengths, the first wave is used as the starting point for all spells. Unfortunately this means that an unknown proportion of the spells are left-censored. No effort is made in the empirical analysis to adjust for the effect this may have on the results. In addition, only single spells of self-employment are used for any individual.

#### **IV. Results**

##### *Descriptive statistics*

Means and standard deviations are presented for each of the variables utilized in this analysis in Tables 1 and 2, by country and gender. Variable definitions are presented in Appendix table A1. The results in Table 1 are for a balanced sample of individuals who were self-employed in 1994 and are present in the data in all waves 1 through 6

(1994-1999).<sup>9</sup> All variables (except duration of self-employment) take values for 1994 or 1995.<sup>10</sup> The sample is also limited to those observations that have non-missing values for all variables, including the self-employment duration variable DUR1, which is measured in months of self-employment. Table 2 presents the same information for a balanced sample of individuals who have non-missing values including the self-employment duration variable DUR2, which is measured using an annual definition of self-employment. The sample size is slightly larger in Table 2. Person-level sample weights are utilized, using the values from the first wave.<sup>11</sup>

[INSERT TABLES 1 AND 2 HERE]

Two key variables of interest are the duration of self-employment and the time spent caring for children. Both variables are seen to vary considerably across countries and by gender. Referring to Table 1, among males the duration of self-employment is highest in Belgium and Ireland and lowest in Denmark. Among females, the duration of self-employment is highest in France, and lowest in Denmark. The duration of self-employment is higher for males than for females in all of the countries studied, although the gender difference is small in France. Holding constant rates of entry, these differences in duration contribute to the gender differences in self-employment rates found in these countries.

Time spent caring for children is found to be highest among males in Denmark, and lowest among males in Portugal. Among females, the average time spent caring for children is highest in Belgium, and lowest in France and Portugal. In all of the countries studied, the average time spent caring for children is considerably higher for females than

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<sup>9</sup> Results for an unbalanced sample are presented in Appendix tables A2 and A3, available from the author upon request.

<sup>10</sup> Future analyses will be conducted for a pooled analysis with time-varying covariates.

<sup>11</sup> Therefore the “all country” statistics are not representative of the population as a whole.



for males. These patterns are found in the results for the slightly different sample presented in Table 2 as well, and for the unbalanced sample results in Appendix tables A2 and A3 (available upon request).

### *Duration analysis*

The duration of a spell of self-employment for individual “i”, measured by DUR1 or DUR2, is modeled as a function of the time spent caring for children (CARE95), a set of other explanatory variables, X, and a random error term,  $e$  :

$$DUR_i = f(CARE95_i, X_i, e_i),$$

where the error is assumed to follow the extreme value (Weibull) distribution. The coefficients for the specification are estimated using the LIFEREG procedure in SAS, Version 8. Our hypothesis is that the CARE95 variable will have a negative effect on duration of self-employment.

The estimated coefficients and their standard errors are presented in Tables 3 and 4, by gender and country. The first column in each table gives the coefficients from a pooled analysis for all countries, with a set of country-specific dummy variables. The remaining columns present the country specific estimates. In the first column, all coefficients that are statistically significant at least at the .10 level are in bold face. In the remaining columns, the significance levels are indicated only for the CARE95 and KIDS94 variables. Tables 3 and 4 differ in the measurement of duration, as monthly or annually. Since the annual (but not monthly) measure is available for the Netherlands, the “all countries” column in Table 4 also includes the Netherlands sample.

[INSERT TABLES 3 AND 4 HERE]

Referring first to the results for all countries in both tables, we find that most of the control variables have significant effects on the duration of self-employment in these

samples. Age is found to have a negative and significant effect on duration, while attainment of higher levels of education has a positive effect, as does ownership of one's residence, a proxy for financial wealth. Among males, reporting that one is in "bad health" significantly decreases the duration of self-employment. A very important determinant of survival in self-employment is the number of hours worked per week (HRS94), for both genders and for both measures of duration. This variable is also highly significant in all of the individual country estimates (not indicated in the tables).

The results regarding the effects of children, as measured by the number of children in the household, are mixed. The number of children is found to have a positive and significant effect on months and years of duration of self-employment for males, but negative (and insignificant) effects for females. The estimated coefficients for the time spent caring for children variable, however, are consistently negative and significant for both genders and both definitions of duration. The coefficient does appear to be larger for males than for females.

The results are more mixed when looking at the nation-specific estimates. In Table 3, for example, the coefficient on the CARE95 variable is negative in six of the eight countries for the male samples, but negative and significant in only three (France, Greece, and Italy). Among females, the coefficient is negative in five of the countries, and significantly negative in four (France, Greece, Ireland, and Portugal). Some of the sample sizes are quite small (e.g., for Denmark and Belgium), which might make the coefficient estimates less precise. Counter to our expectations, however, the coefficient is positive and significant for females in Italy. The results are generally similar in Table 4, with some negative and significant coefficients on the CARE95 variable. The results for the Netherlands, available using the annual measure but not reported here, support the

hypothesis of a negative relationship, with negative coefficients for both males and females, and statistically significant for females.

We should note that the results using a larger, unbalanced sample are consistent with those reported above.<sup>12</sup> The estimates for all countries combined yield negative and significant coefficients on the CARE95 variable for both males and females. The estimates for individual nations are even slightly stronger than those from the balanced sample. The CARE95 coefficient for males is negative for six countries, and significantly so for four of them (Belgium, France, Italy, and Greece). The coefficient for females also is negative for six countries, and significant in four (France, Ireland, Greece, and Portugal).

In general, we conclude that the evidence supports the notion that caring for children has a negative impact on self-employment duration in most countries. The effect appears to be strongest in France, Greece, Italy and Portugal. One might conclude that the effect is consistent among the southern European nations, except for the fact that we find positive (but insignificant) coefficients for Spain, and the anomalous result for females in Italy. Nonetheless, further work should examine the child-care and self-employment policies in these nations in comparison with those in the north of Europe, in search of explanations for these results.

One explanation for the less than universal support for the maintained hypothesis is that the care variable is poorly defined, in that it refers only to the 1995 time period. We are implicitly assuming that the level of care in 1995 is indicative of the level of care in other periods, including 1994. An analysis wherein the care variable is allowed to vary over time might yield better estimates of its effect. Such an analysis, using pooled data

with multiple spells, is a topic for further research. Other extensions, including alternative definitions for the CARE variable and inclusion of a household income variable for the multinational estimates, will also be conducted. Finally, a binary analysis of exit rates from self-employment for the early period 1995-96 would allow inclusion of the U.K., Germany, and Luxembourg in the analysis.

## **V. Summary and Conclusions**

The empirical analysis conducted here presents estimates of the effects that time spent caring for children, measured as hours per week, has on the probability of survival in self-employment and on earnings of the self-employed in eight countries in the 1994-1999 time period. The negative effects found in many countries suggest that programs to encourage self-employment, especially among women, may be most effective if they are coordinated with programs to improve child-care opportunities as well.

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<sup>12</sup> The estimates are presented in Appendix tables A4 and A5, available upon request. The unbalanced sample includes more than 10,000 individual spells of self-employment.

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Table 1: Descriptive Statistics, sample with monthly duration variable

(a) Males

Variable	All Countries		Belgium		Denmark		France		Greece		Ireland		Italy		Portugal		Spain	
	Mean	St.Dev.	Mean	St.Dev.	Mean	St.Dev.	Mean	St.Dev.	Mean	St.Dev.	Mean	St.Dev.	Mean	St.Dev.	Mean	St.Dev.	Mean	St.Dev.
dur1	54.997	23.650	61.998	17.802	44.547	25.843	57.860	21.829	55.075	24.482	61.459	17.329	53.517	24.541	55.209	23.117	51.084	25.888
age94	46.635	12.106	43.927	11.028	51.132	12.206	45.494	10.452	46.907	12.376	49.557	12.158	44.442	11.723	49.208	12.761	45.296	11.425
ed294	0.209	0.396	0.322	0.446	0.396	0.475	0.439	0.487	0.189	0.393	0.244	0.386	0.253	0.421	0.042	0.194	0.165	0.370
ed394	0.107	0.301	0.326	0.448	0.244	0.417	0.219	0.406	0.095	0.295	0.102	0.272	0.077	0.258	0.041	0.193	0.114	0.317
care95	2.106	7.134	3.039	9.642	3.735	10.749	1.893	7.195	1.334	5.354	2.770	8.280	3.258	8.064	0.645	3.634	2.743	8.581
kids94	0.864	1.031	0.668	0.948	0.554	1.016	0.824	1.010	0.869	1.011	1.216	1.318	0.848	0.991	0.810	0.953	0.840	0.965
hrs94	50.115	18.510	58.026	14.834	47.886	21.583	43.804	26.701	52.640	18.370	55.962	17.408	46.065	15.164	51.146	14.060	48.747	20.755
own	0.828	0.368	0.737	0.420	0.847	0.347	0.727	0.437	0.880	0.326	0.966	0.163	0.797	0.390	0.773	0.407	0.833	0.373
ag	0.317	0.454	0.167	0.357	0.374	0.470	0.229	0.412	0.414	0.494	0.598	0.440	0.131	0.327	0.381	0.471	0.253	0.433
ind	0.251	0.423	0.286	0.432	0.195	0.385	0.195	0.388	0.231	0.423	0.170	0.337	0.330	0.456	0.289	0.439	0.210	0.406
prof	0.197	0.387	0.178	0.365	0.259	0.425	0.125	0.324	0.250	0.435	0.237	0.382	0.115	0.309	0.233	0.409	0.192	0.393
mang	0.064	0.239	0.208	0.388	0.104	0.297	0.106	0.301	0.045	0.208	0.051	0.199	0.079	0.261	0.035	0.179	0.053	0.223
badhlth	0.057	0.225	0.000	0.000	0.069	0.246	0.027	0.159	0.040	0.196	0.007	0.077	0.055	0.221	0.128	0.323	0.068	0.251

(b) Females

Variable	All Countries		Belgium		Denmark		France		Greece		Ireland		Italy		Portugal		Spain	
	Mean	St.Dev.	Mean	St.Dev.	Mean	St.Dev.	Mean	St.Dev.	Mean	St.Dev.	Mean	St.Dev.	Mean	St.Dev.	Mean	St.Dev.	Mean	St.Dev.
dur1	44.029	26.167	48.819	22.971	33.113	25.078	52.294	23.787	42.399	27.129	42.652	22.872	39.064	25.683	47.147	26.918	42.056	25.796
age94	45.512	12.441	39.558	8.668	42.833	11.342	45.406	10.394	46.509	12.882	48.160	12.429	42.941	11.429	47.876	13.617	44.753	12.598
ed294	0.197	0.392	0.296	0.405	0.556	0.473	0.399	0.470	0.136	0.344	0.504	0.454	0.304	0.432	0.037	0.198	0.175	0.381
ed394	0.113	0.313	0.457	0.442	0.262	0.419	0.159	0.351	0.146	0.355	0.126	0.301	0.069	0.239	0.017	0.137	0.166	0.373
care95	11.091	18.743	19.877	23.137	10.172	19.151	7.970	17.186	11.555	17.442	14.044	23.874	15.844	17.963	6.945	16.112	11.045	21.375
kids94	0.786	1.023	1.178	1.003	0.685	0.960	0.765	0.986	0.725	0.965	0.696	0.917	0.790	0.984	0.846	1.180	0.669	0.881
hrs94	41.794	19.548	47.175	18.615	36.970	20.465	36.707	23.358	41.475	18.295	37.601	21.101	36.475	18.467	46.254	16.564	43.975	21.815
own	0.799	0.395	0.731	0.390	0.842	0.347	0.750	0.417	0.882	0.325	0.971	0.152	0.768	0.398	0.757	0.453	0.829	0.373
ag	0.315	0.459	0.027	0.144	0.221	0.395	0.201	0.385	0.400	0.492	0.267	0.401	0.118	0.303	0.523	0.526	0.245	0.431
ind	0.084	0.274	0.177	0.338	0.144	0.334	0.037	0.182	0.070	0.257	0.029	0.152	0.112	0.296	0.083	0.291	0.069	0.254
prof	0.199	0.394	0.116	0.284	0.128	0.318	0.191	0.378	0.350	0.479	0.366	0.437	0.052	0.209	0.185	0.409	0.241	0.429
mang	0.066	0.245	0.283	0.400	0.024	0.146	0.083	0.265	0.047	0.214	0.117	0.292	0.092	0.271	0.009	0.102	0.089	0.286
badhlth	0.101	0.297	0.036	0.165	0.048	0.204	0.055	0.218	0.055	0.229	0.000	0.000	0.083	0.260	0.168	0.393	0.127	0.334

Table 2: Descriptive Statistics, sample with annual duration variable



(a) Males

Variable	All Countries		Belgium		Denmark		France		Greece		Ireland		Italy		Portugal		Spain	
	Mean	St.Dev.	Mean	St.Dev.	Mean	St.Dev.	Mean	St.Dev.	Mean	St.Dev.	Mean	St.Dev.	Mean	St.Dev.	Mean	St.Dev.	Mean	St.Dev.
dur2	4.639	1.905	5.315	1.443	4.078	2.043	5.207	1.453	4.521	2.042	5.075	1.686	4.673	1.944	4.424	1.978	4.502	2.036
age94	46.493	12.441	42.955	11.760	49.824	13.188	44.520	10.209	47.237	12.349	50.025	13.415	44.737	12.344	51.276	13.547	44.504	11.535
ed294	0.227	0.409	0.328	0.471	0.353	0.480	0.473	0.500	0.190	0.393	0.246	0.431	0.269	0.444	0.038	0.191	0.170	0.376
ed394	0.111	0.306	0.333	0.473	0.294	0.458	0.211	0.409	0.098	0.298	0.084	0.278	0.078	0.268	0.022	0.147	0.124	0.330
care95	2.109	6.959	2.617	7.995	4.833	12.712	1.423	5.797	1.303	5.104	2.403	8.094	3.155	7.740	0.540	3.562	2.595	8.181
kids94	0.858	1.034	0.860	1.097	0.708	1.169	0.949	1.062	0.887	1.034	1.152	1.418	0.788	0.967	0.716	0.997	0.918	0.995
hrs94	50.804	17.475	58.550	16.134	51.804	18.054	53.486	18.760	52.893	17.768	58.883	19.748	46.305	14.878	47.750	17.439	50.308	19.370
own	0.831	0.366	0.778	0.417	0.885	0.320	0.755	0.431	0.855	0.353	0.972	0.166	0.823	0.382	0.827	0.378	0.845	0.362
ag	0.335	0.461	0.135	0.343	0.402	0.493	0.277	0.448	0.422	0.494	0.648	0.478	0.175	0.380	0.496	0.500	0.267	0.443
ind	0.253	0.424	0.242	0.429	0.255	0.438	0.247	0.432	0.223	0.416	0.161	0.368	0.325	0.469	0.199	0.400	0.226	0.419
prof	0.214	0.400	0.169	0.375	0.333	0.474	0.153	0.361	0.256	0.437	0.212	0.409	0.102	0.303	0.192	0.394	0.220	0.414
mang	0.071	0.250	0.225	0.419	0.108	0.312	0.133	0.341	0.046	0.210	0.046	0.210	0.082	0.274	0.017	0.130	0.057	0.231
badhlth	0.064	0.240	0.000	0.000	0.049	0.217	0.017	0.128	0.042	0.202	0.008	0.091	0.053	0.224	0.171	0.377	0.071	0.257

(a) Females

Variable	All Countries		Belgium		Denmark		France		Greece		Ireland		Italy		Portugal		Spain	
	Mean	St.Dev.	Mean	St.Dev.	Mean	St.Dev.	Mean	St.Dev.	Mean	St.Dev.	Mean	St.Dev.	Mean	St.Dev.	Mean	St.Dev.	Mean	St.Dev.
dur2	3.782	2.120	4.670	1.992	3.174	2.174	4.576	1.833	3.582	2.228	3.815	2.015	3.799	2.163	3.754	2.139	3.547	2.138
age94	45.435	12.496	39.913	9.951	44.174	10.969	45.336	10.518	45.757	13.022	46.923	13.845	42.528	11.221	49.706	12.986	45.062	12.720
ed294	0.205	0.397	0.267	0.445	0.522	0.505	0.384	0.488	0.164	0.371	0.446	0.501	0.277	0.448	0.026	0.158	0.156	0.364
ed394	0.121	0.320	0.465	0.501	0.239	0.431	0.176	0.382	0.148	0.356	0.200	0.403	0.069	0.254	0.013	0.113	0.169	0.375
care95	11.961	19.679	21.235	27.161	7.667	17.573	7.292	15.332	11.112	16.880	12.065	22.837	15.890	19.044	5.823	13.782	10.719	20.048
kids94	0.795	1.027	1.290	1.225	0.683	0.986	0.780	1.004	0.768	0.976	0.730	1.153	0.636	0.910	0.691	0.999	0.726	0.966
hrs94	41.883	18.535	44.293	21.544	37.413	19.686	46.292	17.566	42.329	16.616	41.646	25.150	41.336	15.730	41.022	17.489	44.021	20.606
own	0.798	0.395	0.780	0.416	0.854	0.358	0.748	0.436	0.846	0.361	0.968	0.177	0.777	0.417	0.820	0.385	0.848	0.360
ag	0.330	0.463	0.019	0.139	0.283	0.455	0.232	0.424	0.375	0.485	0.246	0.434	0.165	0.372	0.600	0.491	0.263	0.441
ind	0.097	0.291	0.165	0.373	0.152	0.363	0.048	0.215	0.092	0.290	0.062	0.242	0.119	0.324	0.074	0.262	0.078	0.269
prof	0.219	0.407	0.087	0.284	0.109	0.315	0.272	0.447	0.382	0.487	0.431	0.499	0.053	0.224	0.146	0.354	0.284	0.452
mang	0.077	0.262	0.291	0.457	0.065	0.250	0.088	0.284	0.063	0.242	0.169	0.378	0.102	0.304	0.008	0.092	0.086	0.282
badhlth	0.103	0.299	0.029	0.169	0.043	0.206	0.040	0.197	0.046	0.210	0.015	0.124	0.066	0.249	0.195	0.397	0.119	0.325

Table 3: Survival analysis, Monthly Duration measure DUR1

## (a) Males

Variable	All Countries		Belgium		Denmark		France		Greece		Ireland		Italy		Portugal		Spain	
	Coeff.	St.Err.	Coeff.	St.Err.	Coeff.	St.Err.	Coeff.	St.Err.	Coeff.	St.Err.	Coeff.	St.Err.	Coeff.	St.Err.	Coeff.	St.Err.	Coeff.	St.Err.
Intercept	<b>4.953</b>	<b>0.186</b>	5.056	0.723	2.172	0.981	7.491	0.715	4.758	0.396	5.110	0.860	3.366	0.323	5.039	0.509	4.197	0.449
age94	<b>-0.024</b>	<b>0.003</b>	-0.034	0.011	-0.004	0.012	-0.066	0.012	-0.029	0.006	-0.009	0.008	-0.009	0.005	-0.023	0.007	-0.021	0.007
ed294	0.044	0.071	0.373	0.225	0.005	0.358	0.391	0.201	-0.208	0.146	-0.277	0.228	0.216	0.138	-0.100	0.386	-0.184	0.184
ed394	<b>0.263</b>	<b>0.118</b>	0.624	0.330	0.007	0.351	0.279	0.264	0.507	0.312	1.004	0.562	0.119	0.277	-0.849	0.629	-0.184	0.253
care95	<b>-0.011</b>	<b>0.003</b>	-0.009	0.007	0.032	0.024	<b>-0.018</b>	<b>0.010</b>	<b>-0.030</b>	<b>0.009</b>	-0.001	0.010	<b>-0.015</b>	<b>0.006</b>	-0.015	0.017	0.001	0.008
kids94	<b>0.101</b>	<b>0.030</b>	0.141	0.155	-0.032	0.185	<b>-0.204</b>	<b>0.123</b>	<b>0.195</b>	<b>0.066</b>	0.002	0.069	<b>0.130</b>	<b>0.059</b>	0.093	0.082	0.074	0.078
hrs94	<b>0.021</b>	<b>0.002</b>	0.011	0.007	0.033	0.007	0.007	0.004	0.016	0.003	0.014	0.005	0.037	0.004	0.023	0.005	0.023	0.003
hhinc			0.000	0.000	0.003	0.001	0.000	0.001	0.000	0.000	0.008	0.010	0.001	0.002	0.000	0.000	0.000	0.000
own	<b>0.148</b>	<b>0.068</b>	0.137	0.235	-0.055	0.434	0.324	0.201	0.291	0.164	-0.852	0.706	0.092	0.133	-0.037	0.153	-0.034	0.174
ag	<b>0.181</b>	<b>0.068</b>	0.717	0.369	0.320	0.336	0.287	0.268	0.390	0.148	0.392	0.274	-0.148	0.162	-0.229	0.180	0.364	0.167
ind	<b>0.108</b>	<b>0.065</b>	-0.123	0.231	0.320	0.386	0.268	0.250	0.143	0.153	0.521	0.317	0.098	0.121	-0.364	0.183	0.024	0.160
prof	<b>0.157</b>	<b>0.072</b>	0.270	0.258	-0.312	0.296	-0.272	0.300	0.209	0.150	0.655	0.308	0.172	0.200	-0.126	0.179	0.274	0.176
mang	0.232	0.148	-0.081	0.326	-0.242	0.538	0.639	0.436	0.426	0.446	1.207	0.682	0.017	0.270	-0.436	0.708	0.248	0.354
badhlth	<b>-0.607</b>	<b>0.086</b>	0.000	0.000	0.321	0.495	-0.883	0.375	-0.470	0.204	0.418	0.868	-0.897	0.180	-0.454	0.159	-0.458	0.211
DK	<b>-0.708</b>	<b>0.159</b>																
BE	-0.057	0.175																
FR	0.138	0.121																
IR	<b>0.209</b>	<b>0.122</b>																
IT	<b>-0.188</b>	<b>0.087</b>																
GR	<b>-0.231</b>	<b>0.081</b>																
es	<b>-0.399</b>	<b>0.089</b>																
N	4241		143		91		327		1062		436		865		643		567	
Log L	-4182.6		-79.7		-91.9		-281.3		-1119.4		-259.8		-858.7		-673.2		-657.5	

## (b) Females

Variable	All Countries		Belgium		Denmark		France		Greece		Ireland		Italy		Portugal		Spain	
	Coeff.	St.Err.	Coeff.	St.Err.	Coeff.	St.Err.	Coeff.	St.Err.	Coeff.	St.Err.	Coeff.	St.Err.	Coeff.	St.Err.	Coeff.	St.Err.	Coeff.	St.Err.
Intercept	<b>4.259</b>	<b>0.223</b>	4.582	1.089	3.181	1.238	3.661	0.891	4.384	0.532	4.123	1.450	3.043	0.419	5.131	0.432	3.515	0.472
age94	<b>-0.018</b>	<b>0.004</b>	-0.025	0.022	-0.051	0.016	-0.021	0.017	-0.026	0.008	-0.032	0.016	-0.010	0.006	-0.023	0.007	-0.013	0.008
ed294	<b>0.169</b>	<b>0.092</b>	-0.231	0.460	-0.465	0.497	0.359	0.296	0.151	0.237	0.248	0.351	0.207	0.158	0.035	0.373	0.242	0.218
ed394	<b>0.359</b>	<b>0.150</b>	0.155	0.437	-0.961	0.432	0.652	0.535	0.096	0.272	1.040	0.845	1.056	0.430	-1.312	0.520	0.074	0.287
care95	<b>-0.004</b>	<b>0.002</b>	-0.006	0.008	0.003	0.010	<b>-0.020</b>	<b>0.007</b>	<b>-0.017</b>	<b>0.005</b>	<b>-0.020</b>	<b>0.011</b>	<b>0.009</b>	<b>0.004</b>	<b>-0.016</b>	<b>0.005</b>	0.003	0.005
kids94	-0.039	0.040	<b>-0.318</b>	<b>0.182</b>	<b>-0.436</b>	<b>0.134</b>	<b>0.371</b>	<b>0.191</b>	0.167	0.111	0.110	0.231	<b>-0.133</b>	<b>0.069</b>	0.001	0.085	-0.054	0.102
hrs94	<b>0.023</b>	<b>0.002</b>	0.018	0.009	0.037	0.007	0.026	0.007	0.019	0.004	0.020	0.009	0.035	0.004	0.013	0.004	0.024	0.004
hhinc			0.000	0.000	0.001	0.001	0.000	0.000	0.000	0.000	-0.005	0.019	-0.001	0.003	0.000	0.000	0.000	0.000
own	<b>0.203</b>	<b>0.082</b>	0.430	0.439	1.984	0.630	1.181	0.329	0.449	0.235	0.562	0.861	0.128	0.149	-0.329	0.153	0.338	0.192
ag	<b>-0.149</b>	<b>0.084</b>	-2.703	0.766	-0.141	0.381	-0.451	0.350	-0.361	0.188	0.269	0.469	-0.075	0.194	0.155	0.167	-0.273	0.201
ind	-0.063	0.119	-0.366	0.441	0.124	0.675	0.194	0.689	-0.516	0.280	0.000	0.000	-0.269	0.197	0.736	0.296	-0.663	0.252
prof	0.008	0.097	-0.407	0.488	-0.437	0.587	-0.223	0.364	0.091	0.198	0.247	0.450	0.604	0.407	-0.182	0.188	0.151	0.187
mang	0.269	0.187	0.011	0.515	-1.075	0.851	-1.015	0.621	0.214	0.467	-0.123	0.690	-0.294	0.318	3.364	1.675	0.874	0.466
badhlth	-0.136	0.102	-1.360	0.700	0.838	0.704	0.039	0.427	-0.453	0.248	0.000	0.000	-0.180	0.217	0.075	0.174	-0.501	0.193
DK	<b>-0.897</b>	<b>0.221</b>																
BE	-0.345	0.194																
FR	0.246	0.144																
IR	-0.447	0.196																
IT	-0.399	0.103																
GR	-0.343	0.098																
es	-0.429	0.107																
N	1487		76		32		136		284		50		321		348		212	
Log L	-1853.0		-63.7		-22.0		-127.9		-368.1		-43.1		-356.3		-483.3		-254.9	

Table 4: Survival analysis, Annual Duration measure DUR2

(a) Males

Variable	All Countries		Belgium		Denmark		France		Greece		Ireland		Italy		Portugal		Spain	
	Coeff.	St.Err.	Coeff.	St.Err.	Coeff.	St.Err.	Coeff.	St.Err.	Coeff.	St.Err.	Coeff.	St.Err.	Coeff.	St.Err.	Coeff.	St.Err.	Coeff.	St.Err.
Intercept	<b>2.186</b>	<b>0.204</b>	2.716	0.838	0.654	1.018	4.217	0.692	2.279	0.357	2.630	0.729	1.814	0.322	2.555	0.385	2.221	0.383
age94	<b>-0.022</b>	<b>0.002</b>	-0.028	0.014	-0.004	0.011	-0.040	0.011	-0.028	0.005	-0.022	0.008	-0.021	0.005	-0.023	0.005	-0.021	0.006
ed294	0.035	0.066	-0.101	0.305	-0.446	0.331	0.356	0.188	-0.132	0.134	-0.278	0.238	0.244	0.138	-0.015	0.317	-0.503	0.165
ed394	<b>0.353</b>	<b>0.112</b>	0.583	0.403	-0.388	0.313	0.059	0.268	0.413	0.260	1.219	0.553	0.174	0.272	-1.021	0.429	0.226	0.272
care95	<b>-0.008</b>	<b>0.003</b>	<b>-0.019</b>	<b>0.009</b>	0.010	0.014	0.042	0.048	<b>-0.027</b>	<b>0.008</b>	0.004	0.013	<b>-0.016</b>	<b>0.006</b>	<b>-0.024</b>	<b>0.012</b>	0.016	0.008
kids94	<b>0.134</b>	<b>0.027</b>	0.130	0.185	0.121	0.173	0.042	0.117	<b>0.201</b>	<b>0.059</b>	0.017	0.073	<b>0.156</b>	<b>0.061</b>	0.035	0.068	0.038	0.071
hrs94	<b>0.017</b>	<b>0.001</b>	0.017	0.008	0.022	0.007	0.001	0.004	0.017	0.003	0.014	0.005	0.030	0.004	0.019	0.003	0.020	0.003
hhinc			0.000	0.000	0.002	0.001	0.001	0.001	0.000	0.000	-0.002	0.003	0.001	0.002	0.000	0.000	0.000	0.000
own	0.101	0.062	0.126	0.327	-0.030	0.329	-0.029	0.191	0.144	0.151	-0.213	0.521	0.128	0.135	-0.098	0.126	0.130	0.160
ag	0.091	0.061	0.257	0.425	0.102	0.334	-0.122	0.223	0.340	0.139	0.590	0.294	-0.146	0.150	0.043	0.143	-0.243	0.153
ind	0.075	0.061	0.234	0.327	0.451	0.324	-0.176	0.206	0.182	0.141	0.683	0.337	0.073	0.119	-0.138	0.148	-0.248	0.149
prof	0.032	0.063	0.083	0.356	-0.076	0.258	-0.487	0.224	0.031	0.134	0.862	0.338	0.010	0.180	0.008	0.151	-0.114	0.160
mang	-0.035	0.128	-0.524	0.382	0.051	0.565	0.417	0.419	0.159	0.356	0.615	0.476	0.007	0.258	0.730	0.554	-0.568	0.311
badhlth	<b>-0.521</b>	<b>0.075</b>	0.000	0.000	0.045	0.457	13.293	45998	-0.541	0.182	-0.309	0.505	-0.498	0.182	-0.386	0.124	-0.586	0.183
DK	-0.153	0.176																
BE	<b>0.586</b>	<b>0.201</b>																
FR	<b>0.585</b>	<b>0.162</b>																
IR	<b>0.518</b>	<b>0.152</b>																
IT	<b>0.313</b>	<b>0.136</b>																
GR	0.105	0.132																
es	0.071	0.138																
PO	<b>0.369</b>	<b>0.138</b>																
N	4470		153		96		269		1086		456		873		720		574	
Log L	-4208.7		-81.5		-92.3		-147.9		-1137.3		-293.8		-776.7		-704.7		-624.2	

## (b) Females

Variable	All Countries		Belgium		Denmark		France		Greece		Ireland		Italy		Portugal		Spain	
	Coeff.	St.Err.	Coeff.	St.Err.	Coeff.	St.Err.	Coeff.	St.Err.	Coeff.	St.Err.	Coeff.	St.Err.	Coeff.	St.Err.	Coeff.	St.Err.	Coeff.	St.Err.
Intercept	<b>2.174</b>	<b>0.263</b>	1.396	1.110	2.552	1.703	2.543	0.900	2.291	0.526	1.142	1.146	1.590	0.554	2.944	0.383	1.591	0.417
age94	<b>-0.021</b>	<b>0.003</b>	-0.007	0.020	-0.033	0.027	-0.024	0.015	-0.018	0.008	-0.036	0.014	-0.028	0.009	-0.031	0.006	-0.016	0.008
ed294	<b>0.256</b>	<b>0.093</b>	0.041	0.492	-0.273	0.700	0.322	0.290	0.199	0.228	-0.220	0.304	0.488	0.226	-0.186	0.367	0.230	0.215
ed394	<b>0.515</b>	<b>0.148</b>	0.543	0.472	-0.403	0.836	1.389	0.669	0.495	0.309	0.047	0.636	1.208	0.534	-0.617	0.968	-0.046	0.263
care95	<b>-0.003</b>	<b>0.002</b>	0.000	0.008	0.013	0.014	-0.002	0.011	<b>-0.017</b>	<b>0.005</b>	0.004	0.008	0.006	0.005	<b>-0.017</b>	<b>0.005</b>	0.002	0.004
kids94	-0.038	0.040	-0.028	0.210	-0.128	0.231	0.187	0.198	0.151	0.106	-0.076	0.168	<b>-0.169</b>	<b>0.085</b>	-0.002	0.080	-0.053	0.101
hrs94	<b>0.014</b>	<b>0.002</b>	0.011	0.010	0.018	0.009	0.006	0.007	0.012	0.004	0.009	0.007	0.024	0.006	0.013	0.003	0.018	0.004
hhinc			0.000	0.000	-0.001	0.001	0.000	0.000	0.000	0.000	-0.014	0.013	0.015	0.005	0.000	0.000	0.000	0.000
own	<b>0.200</b>	<b>0.077</b>	0.811	0.489	0.355	0.516	0.862	0.304	0.480	0.230	2.570	0.733	0.028	0.185	-0.168	0.135	0.183	0.186
ag	-0.247	0.081	-2.765	0.777	-0.209	0.524	-0.477	0.350	-0.809	0.227	0.036	0.485	-0.056	0.223	0.197	0.150	-0.489	0.181
ind	<b>-0.305</b>	<b>0.107</b>	0.009	0.502	-0.013	0.665	-0.732	0.680	-0.883	0.283	-0.409	0.727	-0.365	0.219	0.515	0.243	-0.680	0.233
prof	-0.083	0.088	-0.604	0.595	-0.601	0.596	-0.589	0.304	-0.183	0.215	-0.208	0.456	0.222	0.418	-0.063	0.182	0.010	0.183
mang	-0.106	0.165	0.196	0.569	-1.128	0.649	-1.393	0.577	0.307	0.578	0.006	0.591	-0.672	0.362	2.696	1.853	0.328	0.366
badhlth	-0.108	0.096	-0.808	0.817	0.663	1.005	-0.271	0.454	-0.718	0.245	-0.038	0.479	-0.252	0.310	-0.020	0.147	-0.199	0.188
DK	<b>-0.507</b>	<b>0.234</b>																
BE	0.349	0.236																
FR	0.301	0.208																
IR	0.025	0.219																
IT	-0.068	0.176																
GR	-0.106	0.174																
es	-0.258	0.176																
PO	0.213	0.178																
N	1606		89		40		107		292		60		272		415		227	
Log L	-1931.8		-63.5		-38.4		-84.2		-371.9		-53.7		-275.2		-557.9		-276.3	

## APPENDIX TABLE A1

### Variable Definitions

<u>Variable</u>	<u>Definition</u>
DUR1	months of self-employment (from monthly activity status, PC001-012)
DUR2	years of self-employment (from employment status, PE004)
AGE94	Age, in 1994
ED294	= 1 if second stage, secondary level of education, 1994, 0 otherwise
ED394	= 1 if third level of educational attainment, 1994, 0 otherwise
CARE95	weekly hours spent caring for children, reported in 1995
kids94	number of children in the household, under age 16, in 1994
hhinc	household income/1000
own	= 1 if owner occupied residence
ag	= 1 if agricultural sector of employment
ind	= 1 if industrial sector of employment
prof	= 1 if professional occupation
mang	= 1 if managerial occupation
badhlth	= 1 if reports being in bad or very bad health

national dummy variables:

DK= Denmark, BE=Belgium, FR=France, IR=Ireland, IT=Italy, GR=Greece, ES=Spain, PO=Portugal

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